Sanjay Dinesh

Chennai, India | Mail | +91 9884890919 | Website | LinkedIn | GitHub

Education

Vellore Institute of Technology, Chennai, B.Tech in Computer Science Engineering with Specialization in Artificial Intelligence and Robotics — Aug 2023 - Present

- **CGPA:** 9.67/10.0
- **Awards:** Department **Rank 3**

Experience

Dreadnought Robotics, Programming Team Member, VIT Chennai — April 2024 – Present

- Contributed to the development of **Project MIRA** for SAUVC (Singapore AUV Challenge) 2025, focusing on perception and deep learning-based keypoint detection using **MobileNetV2SSD**.
- Built object detection and navigation systems for an **obstacle avoidance robot** using YOLOv5 and sensor fusion.
- Implemented control and path planning algorithms (**PD**, **Bang-Bang**, **A***, **LSRB**) for a **maze-solving robot**.

Microsoft Innovations Club, AIML Lead, VIT Chennai — April 2025 - Present

- Leading a team of students to build an **AI-powered Resume Builder** that utilizes NLP techniques for content enhancement, skill extraction, and formatting optimization.
- Spearheading the development of an **AI Academic Assistant** aimed at automating question generation, summarization, and personalized academic support using LLMs and transformer-based models.

Projects

MIRA – Autonomous Underwater Vehicle (AUV) — SAUVC 2025

- Leading development of the **perception system** for underwater navigation, including real-time object detection, keypoint localization, and image enhancement using OpenCV.
- Built and trained a deep learning pipeline combining **MobileNetV2SSD** and bounding box prediction for robust underwater gate detection in murky visual conditions.

Rubik's Cube Solver Robot using Deep Q-Learning — Ongoing Research Project

- Currently developing a robotic system with **6 stepper motors** capable of manipulating and solving a physical Rubik's Cube.
- Designing a vision system to identify facelet colors and feed state information into a **Deep Q-Learning** algorithm for autonomous solution generation, aiming to enable adaptive learning of optimal move sequences through environment interaction and reward maximization.

Autonomous Maze Solver Robot — Techfest, IIT Bombay Zonals

- Designed and tested multiple path-planning algorithms including **Left-Hand Shortest Route Back (LSRB)**, **A***, and **Bang-Bang Control** for adaptive navigation in mazes.
- Developed a high-speed **Proportional-Derivative (PD)** line-following controller for accurate path tracking under varying curvature and speeds.

Obstacle Avoidance Robot — Team Showcase

- Implemented a real-time object detection system using **YOLOv5** for dynamic obstacle recognition in indoor environments.

Technologies

Languages: Python, C, C++, Java, JavaScript, HTML, CSS
Frameworks & Libraries: ReactJS, ROS, OpenCV, PyTorch, TensorFlow
Tools & Platforms: Linux, Git